GEOGRAPHIC NEWS BULLETINS

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NOTE TO TEACHERS—Because of the Christmas and the New Year's holidays the GEOGRAPHIC NEWS BULLETINS will not be published during the next two weeks. The BULLETINS will be resumed Monday, January 6, 1936.

Photograph by Alexander Wetmore

A GOONEY WELCOME COMMITTEE OF MIDWAY ISLANDS

The *China Clipper*, landing at Midway, was welcomed by a handful of airport officials and a large group of feathered native "citizens"—the Black-Footed Albatross, known to their friends as gooney birds. As one aviator to another, the albatross can show any airman a thing or two about take-off, banking, or gliding, for his long, streamlined wings are as perfectly adapted to the air as any that man may devise. Here Gooney, Jr., is receiving a small squid which his mother has brought home from a fishing trip (see Bulletin No. 5).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Brazil's "Aching" Northeast Shoulder

THE four states of Brazil—Rio Grande do Norte, Parahyba, Pernambuco, and Alagoas—where disorders recently broke out, aggregate only a small area of the vast South American republic, but an extremely important area in the economic life of the nation.

Together they form the tip of the northeast shoulder of South America, with an area equal to about twice that of Pennsylvania. Although not a large slice of a country with 250,000 more square miles than continental United States, these coastal states, with 433 miles of shoreline, are literally in the way of shipping between the ports of the United States and Europe, and Rio de Janeiro, Buenos Aires, and other important South American cities.

Natal and Pernambuco Chief Cities

Natal, chief city and port of Rio Grande do Norte, and Pernambuco (Recife), capital of the State of Pernambuco, have been important commercially since colonial times. While they are still ports of call for vessels in the South Atlantic trade, and are the chief gateways to their States, their present fame is largely due to aviation.

When, less than a decade ago, European pilots sought to conquer the south Atlantic by air, geography favored these cities. Pernambuco is the more eastern of the two, but Natal is 160 miles farther north and therefore closer to Europe. The pilots glanced down the west coast of Africa and their eyes fell on Dakar, the westernmost town on the continent that might be able to accommodate them.

Then they sought the nearest landing places on the east coast of South America. Both Natal and Pernambuco were chosen by the early air route trail blazers. Natal is only about 2,000 miles from Dakar.

Pernambuco's name flared on the front pages of the international press when Commander Francesco de Pinedo, famous Italian flyer, landed there in 1927. Natal occupied the same space when Major Del Prete and Major Ferrarin called there in 1928 on their record-making flight from Rome. Now planes from Europe zoom over the cities so frequently on scheduled flights that citizens take their arrival as a matter of course.

The two cities also are on the route of the big ships of a United States-owned air line linking Miami, Florida, with Buenos Aires.

Lack Modern Development

One of the Europe-to-South America air lines, a German line, using planes and the *Graf Zeppelin,* skirts the African coast and makes a bee line for Pernambuco, while another, a French line, points to Natal by way of Dakar, the chief port of Senegal, French West Africa.

The four States are less developed than some other parts of Brazil. Although they have long been profitable sources of Brazilian sugar, cattle, tobacco, cotton, fruit, lumber, and rubber, but a few hundred miles of railroads have been built. Improved roads are practically unknown, except in the immediate neighborhood of large towns and cities. Fishing is an important local industry (see illustration, page 2).

As in the days when the Portuguese and Dutch held a large part of the "shoulder," produce is still transported from the fertile agricultural regions of the

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Photograph by Capt. A. W. Stevens

FISH CATCH THEMSELVES FOR BRAZILIAN FISHERMEN

Wicker traps spread their arms in a Y to welcome fish that have come close to shore for a meal at high tide. Ebb tide sweeps fish into the inclosures, where they are fattened in the pen like pigs. More primitive traps than these are made by digging artificial lakes along the coast with a wicker gate across the channel to the sea. Fattening fish for food is important to coast dwellers in the disturbed provinces of eastern Brazil, for they do not raise all the foodstuffs they need (see Bulletin No. 1).

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Antarctica Still Has Many Blank Spots

A FROZEN no-man's land never before seen by human eyes, covered by a blanket of ice thousands of feet thick, perhaps dotted here and there with high forbidding mountain ranges, some of which may have been volcanoes in ancient times—such is the mysterious region along the route of Lincoln Ellsworth's projected flight across the Antarctic Continent.

It is the last great blank spot on maps of the world. Like the rest of the Continent, it is locked in the grip of an Ice Age. Except for a number of rugged mountain peaks, the whole South Polar region is covered with an ice cap estimated to be as much as a mile and one-half thick and older than the human race itself (see illustration, next page).

Like Cake with Two Pieces Cut Out

Antarctica is like a huge, round white cake, with two triangular pieces cut out of it on roughly opposite sides. One of the cut-out pieces is the Weddell Sea, long a base for whalers. The other is the Ross Sea, on the edge of which Admiral Richard E. Byrd's two expeditions had their camps at Little America.

Between them is the unknown interior region which Ellsworth and his pilot, Herbert Hollick-Kenyon, set out to explore, flying 2,140 miles from islands near the entrance of the Weddell Sea across to Little America, as far as from St. Louis to Los Angeles.

Some of it is believed to be a vast plateau, several thousand feet above the level of the sea. Dr. Ellsworth himself said it might prove to be a great "ice floor," such as covers the interior of Greenland, or a region of jagged mountain peaks and deep valleys.

No one knows, because 1,300 miles of the country on Ellsworth's route never has been seen by humans, and at least half of it never has been claimed.

May Have Been Land Bridge to South America

If there are mountains there, it may prove that Antarctica and South America once were connected by a land bridge in ancient times. The great Andes mountains are believed to extend 600 miles under the sea to the mountains of Graham Land in Antarctica, near the starting point of Ellsworth's flight. On the other side of the continent are the Edsel Ford and Queen Maude Mountains, explored by two Byrd expeditions.

Admiral Byrd's planes, flying east from the Ross Sea, saw high mountains in the distance and evidence of a plateau from 3,000 to 4,000 feet in height. No previous explorers have crossed the Antarctic Continent, estimated to be as large as Europe and Australia together.

Note: See also "Exploring the Ice Age in Antarctica," maps on pages 405 and 450-51, *National Geographic Magazine*, October, 1935; "Mapping the Antarctic from the Air," October, 1932; "Antarctica's Most Interesting Citizen," February, 1932; "Conquest of Antarctica by Air," August, 1930; "Lure of the Land of Ice," March, 1924; and "Life in the Antarctic," December, 1922.

See also the Map of the Antarctic Regions published as a free supplement to the October, 1932, *National Geographic Magazine*. Additional copies can be had postpaid at 50 cents (paper) and 75 cents (linen).

Bulletin No. 2, December 16, 1935.

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interior to the seaports on pack mules and horses. Sometimes 100 or more laden animals amble through the coast towns with bells tinkling and mule drivers shouting (see illustration, below).

There have been many improvements in harbor facilities at the larger ports in recent years. Ships now can steam into dredged channels and dock, while in former times they anchored far off shore and their cargoes had to be lightered.

Note: For supplementary data and photographs about Brazil consult "Skypaths Through Latin America," *National Geographic Magazine*, January, 1931; and "Gigantic Brazil and Its Glittering Capital," December, 1930.

See also "Journey by Jungle Rivers to the Home of the Cock-of-the-Rock," November, 1933; "In Humboldt's Wake," November, 1931; "Through Brazil to the Summit of Mount Roraima," November, 1930; "By Seaplane to Six Continents," September, 1928; "How Latin America Looks from the Air," October, 1927; "Sindbads of Science," July, 1927; "The World's Great Waterfalls," July, 1926; "Exploring the Valley of the Amazon in a Hydroplane," April, 1926; and "Rio de Janeiro, and the Land of Lure," September, 1920.

Bulletin No. 1, December 16, 1935.

New Map of the World

In connection with studies of Brazil as well as the transpacific flight of the *China Clipper* (see Bulletin No. 5), now so much a matter of interest, an up-to-date map of the world will be helpful in the classroom. A complete and accurate world map in ten colors, 23 by 44 inches, was published by the National Geographic Society as a special supplement to the December, 1935, issue of the *National Geographic Magazine*. It shows in detail the location, spelling, political divisions, and transportation facilities of all places now much discussed in news and textbooks. Additional copies of this map, postage paid, may be secured for 50 cents (paper) and 75 cents (linen).

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PARKING SPACE IN PERNAMBUCO

The city of Recife, called Pernambuco by foreigners because it is the capital of that state, is a busy trading port, exporting sugar, molasses, and fruit, and receiving manufactured products to distribute to rich sugar plantations farther inland. Even for transporting the most up-to-date machinery, a string of little burros will be relied upon, for Recife is slow to abandon old ways, even using an ancient Dutch fort nearly 300 years old.

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Garmisch-Partenkirchen: Scene of the Winter Olympics

FROM February 6 to 16, 1936, Garmisch-Partenkirchen in extreme southern Germany will present scenes of feverish activity as spectators and contestants pour into the place from at least thirty countries of Europe and overseas to compete in athletic events.

As the spot selected for the Fourth Olympic Winter Sports, Garmisch-Partenkirchen is a worthy successor of Chamonix, St. Moritz, and Lake Placid, where the three preceding winter Olympics were held.

Located in the Bavarian Alps, only 90 minutes by train from München (Munich), these picturesque twin villages astride the Partnach are easily accessible to visitors. Since most of their 12,000 inhabitants are engaged in hotel and shop-keeping, athletes and their followers will be assured of hospitality.

Renowned Skiing Center

Ringed about closely by glistening snow-clad peaks that seem to begin almost in the townspeople's back yards, and near several mountain lakes, Garmisch-Partenkirchen offers some of the best winter sport facilities in the world. These were tested when Germany's winter sports contests were held there in 1935, but long before that the place was renowned as a skiing center.

Beginning on February 6, spectators in decorated stands will watch athletes mount the 142-foot tower of the big ski jump, whizz down the inclined plane to the take-off, and then soar through the air from 250 to 300 feet before landing. From the same stands they will be able to witness the start and finish of the cross-country endurance and relay races, and the military patrol race.

Slalom contests (ski races over a curving course) will be included in Olympic competition for the first time when skiers will race down either the Hausberg or the Gudiberg mountains, depending on the weather, winding in and out between the markers indicating the irregular course.

Bobsled Run Tested by Automobile

Some of the most exciting races will take place on the bob run. Olympic teams and their bobsleds, hauled up an incline from the valley to a heated waiting room and starting place far above, will come rocketing down the curving, steeply banked course at speeds of nearly a mile a minute.

To prevent skidding sleds from leaving the track, curves have been banked high and were even tested during this past summer by automobiles for safety slants. Because the region has a fairly mild winter climate, the bob run could not be built entirely of snow, like Swiss ones, but of snow and ice over stone and earth foundations covered with sod. The sharper curves are paved with blocks of ice cut from the Riessersee, a nearby lake.

While skating races are planned for the lake, to prevent postponing events in case of a sudden thaw officials have constructed a large artificial ice rink. Here the ice hockey matches will be played, and exhibitions given of figure skating.

Visitors to the Olympics at Garmisch-Partenkirchen need not merely watch world champions perform; they can even take spills themselves. Clear, sunny days, when the keen air is like a tonic, will see them skiing down dazzling slopes, past wayside crucifixes, and through woods fragrant with pine and fir, where the snow is marked with tiny footprints of hares and other wild creatures.

Energetic Alpinists may toil up the nearby Zugspitz, Germany's highest moun-

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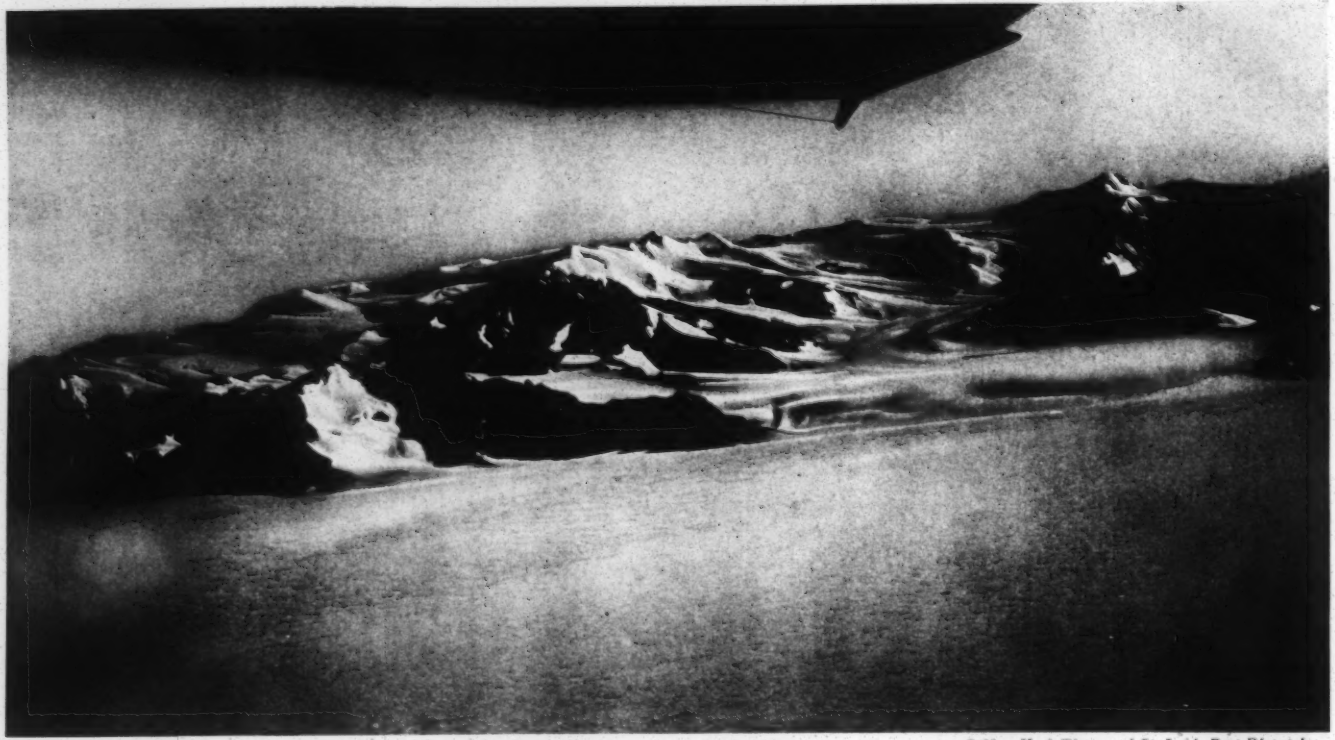

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BLEAK, DESOLATE MOUNTAINS REAR THEIR GAUNT PEAKS ALONG ELLSWORTH'S ROUTE

This photograph, taken from Admiral Byrd's polar plane in 1929, indicates the type of rugged country that comprises most of Antarctica. An ice-locked plateau, ranging in altitude from 7,000 feet to 10,000 feet above sea level, with peaks that reach 17,000 feet, it is the loneliest land on earth (see Bulletin on preceding page).

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National Geographic's Expedition Explores Idaho's "Grand Canyon"

IDAHO'S "Grand Canyon," deeper than the famous Grand Canyon of the Colorado, was explored and photographed from end to end by the National Geographic Society's Salmon River Expedition in October.

The Salmon River flows through one of the wildest regions in the United States. Five hundred miles long, it rises in Redfish Lake in central Idaho. After flowing about 25 miles eastward, it veers north, nearly touching the Idaho-Montana boundary. Then, as if preferring to remain in Idaho, it turns westward across the Idaho waistline. Finally the Salmon pours its torrent into the Snake River, about 50 miles south of Lewiston, Idaho.

While hunters and tourists have drifted down the Salmon, members of the National Geographic's expedition were the first to negotiate the stream to make a scientific study of the geological formations of the region and to record thoroughly its features by black and white and natural color photography.

Led by Government Geologists

The expedition was under the leadership of Dr. Philip J. Shenon and Dr. John C. Reed, geologists of the United States Geological Survey. The Society was represented by Dr. Maynard Owen Williams, of its editorial staff.

The strong current and frequent rapids in the Salmon make navigation of the river hazardous. Only sturdy scows, built especially for the Salmon and manned by expert boatmen who know every rock and habit of the river, are used to negotiate the treacherous stream. The scows have no power, not even oars. Their "steering gear" consists of two long, rudderlike sweeps, one at either end of the craft (see illustration, next page).

At times the expedition's scow moved downstream at a rate of more than fifteen miles an hour. That speed was much less in smooth water, but when there were hairpin turns to make, banks of jagged rocks, and huge midstream boulders to avoid, the barge often had to be checked. This was done sometimes by deliberately running onto submerged rocks to retard the speed, and then twisting the craft free in another direction.

There were times during the expedition's trip, however, when the scow made unavoidable stops on the rocks. Once it took the crew more than three hours to unload and dislodge the craft.

"River of No Return"

The Salmon River justly bears the name "River of No Return." No one has ever navigated more than short local portions of the river upstream. When a party arranges a downstream trip, a scow is purchased and experienced rivermen employed. The craft that goes down the river never returns, hence the name. The 32-foot scow purchased and used by the National Geographic's expedition was presented to the State of Idaho, and will be displayed as an historic museum piece at Lewiston, Idaho.

Because of low water early in October, members of the expedition traveled by automobile along the upper reaches of the river to a point about 56 miles below Salmon, Idaho. Here the scow, a clumsy, but built-for-the-purpose craft, was loaded with full equipment and personnel.

While motoring, as well as while drifting downstream on the scow, frequent stops were made to study geological formations of the granite mass that divides the fertile regions of north and south Idaho, and to take photographs.

For 100 miles below Shoup, Idaho, the expedition found the Salmon River Canyon a wild country, inhabited by only a few scattered, weather-beaten prospectors. Most of the miners earn a bare existence panning the sands of the Salmon and feeder creeks for "color" (gold particles).

Scenery Is Spectacular

Spectacular was the scenery viewed from the scow. Several times the river narrowed, flowing between sheer cliffs hundreds of feet high. Often the canyon opened, however, and there were magnificent vistas of jagged, snow-covered granite peaks soaring above narrow plains flecked with myriad shrubs and wild flowers. Vast National forests of majestic trees flanked most of the course and members of the expedition frequently passed cascading streams.

In some places the Salmon spread out as wide as 150 yards and navigation was compar-

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tain peak, towering 9,725 feet above sea level. It requires ten hours for the laborious ascent on foot. Less energetic sightseers go almost to the top in twenty minutes by aërial railway.

Not far from Garmisch-Partenkirchen is Oberammergau, celebrated as the scene of the Passion Play, and Mittenwald, sometimes called the "German Cremona" because of the number of violins made there. On the heights near Hohenschwangau looms the magnificent castle erected by mad King Ludwig II of Bavaria.

Note: Additional data and photographs about Bavaria, the section of Germany where the Winter Olympic Games will be held, are contained in the following: "Where Bible Characters Live Again," *National Geographic Magazine*, December, 1935; "Entering the Front Doors of Medieval Towns," March, 1932; "Renascent Germany," December, 1928; "Beauty of the Bavarian Alps," June, 1926; "Rothenberg, the City Time Forgot," February, 1926; "The Battle-Line of Languages in Western Europe," February, 1923; "The Races of Europe," December, 1918; and "The Town of Many Gables (Münster)," February, 1915.

Bulletin No. 3, December 16, 1935.

Photograph by E. Gyger

MIDWINTER DAY'S DREAM COMES TRUE IN BAVARIA

When still quite young, Bavarian children get all the spills and upsets and practice necessary to make them skillful skiers. Groups of children by the score take long hikes through the snow to reach a spot suitable for skiing.

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China Clipper Completes Circle of Wings Around the World

THE eyes of the aviation world, and many other eyes as well, have been focused on the Pacific recently, where the Pan American Airways has opened regular air service between the United States and the Orient, via Hawaii, Midway, Wake, Guam, and the Philippines.

The Flight of the *China Clipper*, giant flying boat that carried a heavy cargo of mail for stamp collectors, is historic not only as the first air journey between California and the Far East via the middle of the Pacific, but also because it bridged all except the last gap in the network of regular air lines circling the world.

In other words, it will be possible to go around the world by plane, using the new trans-pacific service from San Francisco to Macau, near Canton, China, and there taking the Imperial Airways to Singapore, in the Straits Settlements. At Singapore there is a choice of British, French or Dutch lines to Europe. German or French air lines would then carry the traveler down the west coast of Africa, and across the south Atlantic to Brazil, where an American plane would bring him back to the United States, and his starting place, San Francisco.

In 1910 150-Mile Flight Amazed Public

For a decade after the Wright brothers made their first successful airplane flight in 1903, flights a few hundred miles and even less were front-page news. In 1910 newspaper readers were amazed when they learned that Glenn Curtis had flown from Albany to New York City, 150 miles, in two hours and fifty-one minutes.

Commercial air service of today had its beginnings in the United States Air Mail. The first scheduled air mail flight, from Washington to New York in 1918, was made by an Army pilot in an Army plane. In the latter part of that year the Post Office Department provided its own pilots and planes and the Washington-New York route was flown daily. In 1920 several lines were linked to form a coast-to-coast air mail route which touched Cleveland, Chicago, and Omaha.

The first coast-to-coast route was flown only during daylight. Mail was dispatched by train during the night. In February, 1921, the first transcontinental day and night flight was made, the trip requiring thirty-three hours and twenty-one minutes. With radio, airway lighting, and high-speed planes, that time was cut nearly in half.

The Post Office Department turned over the air mail to private contractors in 1926, and more than 5,700 passengers were carried on regularly scheduled planes that year. In 1927, nearly 9,000 were transported. Last year more than a half-million passengers used scheduled airplanes.

The planes used in the early days of passenger and express service flew only from 90 to 100 miles per hour. Modern, streamlined planes, with from one to four motors, and with every possible comfort, have a cruising speed of from 150 to more than 200 miles per hour.

Passenger and Express Service Grew in 1926

During the period between 1926 and 1934 air-minded Americans were spreading a network of airlines over this country, carving air fields out of farms, deserts, and mountain plateaus, and erecting beacons to guide night planes. Meanwhile European countries, particularly Great Britain, France, Germany, and the Netherlands, were weaving a network of air routes over Europe, and linking their colonies by air.

If all the world's air routes spanning continents and seas were merged into one route, it would girdle the world at the Equator about nine times. More miles of scheduled air routes are flown under the American flag than under any other national emblem—about 53,000 miles. They link every State in the Union and spread from its borders to Alaska, Canada, South America, the West Indies, and soon, China.

France is the second largest operator of air lines, with about 28,000 miles of airlines flown under the tricolor. Germany has about 26,000, Russia about 25,000, Great Britain, 21,000, and the Netherlands about 12,000.

From comparatively short lines between the capitals of the continent in 1920, European air lines have been stretched to Africa, Asia, the East Indies, Australia, and South America. The longest commercial air route now is that linking London and Brisbane, Australia, about 11,600 miles. The route from Amsterdam to Batavia, Java, is about 9,000 miles.

Other outstanding long routes link Marseilles with Saigon, French Indo-China (7,636 miles); Miami, Florida, with Buenos Aires, via the east coast of South America (7,399 miles); Miami to Buenos Aires, via Panama and the west coast of South America (6,355 miles); Berlin to Santiago, Chile (7,000 miles); Toulouse, France, to Santiago, Chile (6,500 miles); and the

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atively easy. Then, suddenly, it became a narrow, dashing cascade. In one place the river dropped 17 feet in 50 feet.

On the rocks in several parts of the canyon the explorers photographed Indian paintings of men and animals which may be of pre-Columbian origin. They also found several hot springs within a stone's throw of the river. One spring was so close to the Salmon that a member of the expedition stepped into it and then dived into the river. The spring water at 137° Fahrenheit was too hot to stand in, and the river water at 57° Fahrenheit was too cold for comfort.

The Salmon River Canyon is an almost untouched sportsmen's paradise. The river teems with fish, and along the steep, rocky hillsides mountain goats, deer, and grouse are abundant.

Note: An article about the Salmon River Expedition, accompanied by unusual and interesting photographs, is in course of preparation by Dr. Philip J. Shenon and Dr. John C. Reed, and will appear in an early issue of the *National Geographic Magazine*.

Additional references to the Salmon and the Snake Rivers may be found in the following: "A Native Son's Rambles in Oregon," *National Geographic Magazine*, "The Niagaras of Five Continents," September, 1920; and "A Mind's-Eye Map of America," June, 1920.

See also in the GEOGRAPHIC NEWS BULLETINS: "Expedition to Explore 'River of No Returns,'" week of October 7, 1935.

Bulletin No. 4, December 16, 1935.

Supplement to the Cumulative Index in Preparation

The new Cumulative Index, listing articles, pictures, and maps in the *National Geographic Magazine* between January, 1899, and December, 1934, will be brought up-to-date by a supplement now being prepared for publication on February 1, 1936. The Cumulative Index, in paper binding, costs $1.00 and in cloth binding $1.50, postage included. The supplement, which will cover the year 1935, will fit into the envelope pocket provided at the back of the Cumulative Index. Its price will be 25 cents each, postpaid.

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SHOOTING RAPIDS IN A 5-TON BARGE REQUIRES BOTH COURAGE AND SKILL

The stout 32-foot craft of the National Geographic Society Salmon River Expedition during one of the exciting moments of the 310-mile barge journey down Idaho's "Grand Canyon." The barge had no motive power or steering device other than the two heavy, rudderlike sweeps at the bow and stern.

London to Cape Town route (about 6,000 miles). The new California to China route is about 8,000 miles long.

Among the States of the United States, California is the most air-minded, if the number of licensed planes is a measure. In 1933 California had more than 800 licensed airplanes; New York had about 750; Pennsylvania, 412; Ohio, 380; and Michigan, 250. Nevada, with only 12, had the least number of licensed planes of any State.

Note: For additional material and photographs about the islands of the Pacific, and long-distance flying see "My Flight from Hawaii (Earhart)," *National Geographic Magazine*, May, 1935; "Flying Around the North Atlantic," September, 1934; "Flying," May, 1933; "The Greatest Voyage in the Annals of the Sea (Magellan)," December, 1932; "Modern Saga of the Seas," December, 1931; "Unexplored Philippines from the Air," September, 1930; "Some Impressions of 150,000 Miles of Travel," May, 1930; "Flying the World's Longest Air Mail Route," March, 1930; "Our Conquest of the Pacific," October, 1928; "By Seaplane to Six Continents," September, 1928; "Seeing the World from the Air," March, 1928; "Around the World in the *Islander*," February, 1928; "Our Transatlantic Flight (Byrd)," September, 1927; "The Columbus of the Pacific (Cook)," January, 1927; "The Romance of Science in Polynesia," October, 1925; "Bird Life among Lava Rock and Coral Sands," July, 1925; "Non-Stop Flight across America," July, 1924; "The Hawaiian Islands," February, 1924; "Sailing the Seven Seas in the Interest of Science," December, 1922; and "The Islands of the Pacific," December, 1921.

See also in the GEOGRAPHIC NEWS BULLETINS: "Wake Island, 'Stepping Stone' on Proposed Pacific Air Route," week of April 1, 1935.

Bulletin No. 5, December 16, 1935.

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MAUNA LOA'S FIERY FINGER OF LAVA—AN INFERNO IN PARADISE

The *China Clipper* veered southward from its course to Honolulu and saw Mauna Loa, Hawaii's great sore throat, boiling over with renewed volcanic activity. Smoke greeted them 170 miles away, and closer they saw a stream of orange and red liquid rock welling forth from a crack three miles long in the mountainside and burning its way down through the forests. The picture shows a lava stream from Mauna Loa descending upon the little coast village of Hoopuloa, which it destroyed in 1926.

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